

# Case Study Correlation: A HyperCard-Based Case Study Authoring System

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## BACKGROUND

Based on the assumption that quality medical education will continue to move toward active learning, the Ohio University College of Osteopathic Medicine Curriculum Task Force in 1989 identified a list of curricular goals. Five in particular seemed to be approachable with a computer-based case-study format:

1. to increase the integration of computers into the medical education curriculum;
2. to develop alternatives to lecture in the pre-clinical curriculum;
3. to expand the use of the case study format of instruction;
4. to demonstrate the clinical relevance of basic science material presented in the curriculum;
5. to provide programs needed to support students in becoming more active learners.

Although several case-study authoring systems were investigated, none provided the characteristics we felt were most suitable to our purposes, prompting us to create our own authoring system. These characteristics included:

### • ease of authoring

We wanted both basic scientists and clinicians to become involved — preferably as a team — in the creation of cases, regardless of computer literacy. In addition, time factors were felt to be crucial in the decision of faculty members to contribute to the development of a case study. Therefore, our own program was designed to allow rapid, simple entry of clinical and basic science data, shortening case development to less than 1 hour.

### • ease of revision

Since clinical medicine is evolving so rapidly, especially in the areas of treatment and diagnostic studies, many commercially produced cases are out of date or irrelevant soon after purchase, leaving the buyer the option of abandoning that case or purchasing an update. We wanted our authors to be able to revise a case easily once it was initially created to encourage updating clinically relevant material, as well as using the same case to illustrate different aspects of a medical problem. This program allows the author easily to update or to alter an already created case, usually within minutes.

### • multimedia environment

To simulate as realistically as possible a patient-centered encounter, we wanted to be able to incorporate heart/lung sounds, X-rays, and patient photos into the case studies.

### • ease of use

It was important for the cases to be easily accessed by students to maximize their learning potential and maintain interest, while simulating as realistically as possible a genuine patient encounter.

## PROGRAM DESCRIPTION: STUDENT MODE

After an opening screen requesting an entry code, the student is presented with the patient's "Chief Complaint" and given a menu of choices. The menu remains available throughout the case study, allowing student independence in the process of gathering information for the "workup". Choices include "History", "Physical Examination", and "Diagnostic Studies". Each of these takes the student to cards which prompt further decisions in the data gathering technique. Menu items labeled "Diagnosis" and "Treatment" are available whenever the student feels enough information has been gathered to allow for a disposition. When the user has completed all the steps necessary to arrive at a final diagnosis and to initiate treatment, the program shifts to analysis mode, which compares the student's diagnostic conclusions, lab tests, and therapy with the author-expert's selections in these categories. This immediate feedback is followed by the author's "Case Summary" describing the major teaching points of the case, and, optionally, some questions for the student to answer about the case.

A dated/timed printout documents the student's data gathering strategies, diagnosis, therapy selections, and answers to the questions. Students are encouraged to work in groups, to share information, and to discuss and consult with colleagues (just as with real patient encounters) as they "work up" their patient.

## PROGRAM DESCRIPTION: AUTHOR MODE

Entering an "author code" at a prompt puts the program into "Author" mode. The series of screens which follow allow for data entry describing the patient's history, physical exam, and results of diagnostic studies. The use of normal default values in each area minimizes the time spent creating the case. The author can outline his/her own "ideal" approach to the case workup, and provide a case summary, as well as compose specific questions with or without answers supplied for the student.

The program lends itself particularly well to illustrating basic science principles in a clinical setting. (It has most recently been used in a first year Clinical Biochemistry class.) The number of decision points for students is large enough to allow development of decision making skills, yet small enough to prevent overwhelming those students with minimal clinical experience.